

## Notes on Paraguayan Orthoptera, with Descriptions of a new Genus and Four new Species.

BY JAMES A. G. REHN, Academy of Natural Sciences,  
Philadelphia, Pa.

The following notes and descriptions are based on a small but very interesting collection of Orthoptera submitted to me for study by the well-known naturalists, A. de Winkelried Bertoni and Prof. C. Schrottky, of Puerto Bertoni, Paraguay, from which locality the greater portion of the material was secured. Prof. Bruner has already reported\* on a collection of Acridoidea from this locality.

### FORFICULIDAE.

#### *Pyragra brasiliensis* (Gray).

Puerto Bertoni.—One female (Schrottky).

#### *Pyragra paraguayensis* Borelli.

Paraguay.—One male (Schrottky). This specimen is slightly smaller than the original measurements of the species, but otherwise it is typical.

#### *Demogorgon batesi* Kirby.

Puerto Bertoni.—One male (Schrottky).

### BLATTIDAE.

#### *Pseudomops* sp.

Puerto Bertoni.—November. One broken specimen. (Bertoni, No. 715).

#### *Ischnoptera bilunata* Saussure.

Asuncion.—1900. Two males. This species was described from Chiquitos, Bolivia.

#### *Nyctibora sericea* Burmeister.

Puerto Bertoni.—October, 1904. (Bertoni, No. 413).

#### *Panchlora thalassina* Saussure and Zehntner.

Puerto Bertoni.—December, 1909. Two females. (Bertoni, No. 401).

---

\*ENT NEWS, XXI, pp. 301-307.

Caudell has recorded this from Sapucay, Paraguay, while Giglio-Tos reported it from Tala and San Lorenzo, Argentina.

**Tribonium spectrum** (Eschscholtz).

Puerto Bertoni.—October, 1909. One female. (Bertoni, No. 402).

This species has been recorded from Brazil (numerous authors), and Caiza, Bolivian Chaco (Giglio-Tos), while a record of a larva of an undetermined species of this genus from Villa Rica, Paraguay (Giglio-Tos) may refer to this species.

**Monastria biguttata** (Thunberg).

Yaguarasapa.—1892. One male. (Bertoni, No. 479).

**Blaberus minor** Saussure.

Paraguay.—1904. One female. (Bertoni, No. 412). Giglio-Tos has recorded this species from San Lorenzo, Argentina and Aguairenda, Bolivian Chaco and numerous authors have credited it to Brazil.

**Blaberus** sp.

Yaguarasapa.—1892. One female. (Bertoni, No. 475).

This species is probably new and related to *B. rufescens* on one hand and the *postica* group on the other. It seems inadvisable to make a definite determination of this specimen until more material belonging to this extremely variable genus is in hand.

**Blaberus** sp.

Puerto Bertoni.—1905. One nymph. (Bertoni, No. 743.)

**Hormetica atlas** n. sp.

*Type*.—♂; Puerto Bertoni, Paraguay.—1905. (Bertoni, No. 420). [A. N. S. P. type, No. 5174.]

Allied to *H. laevigata* Burmeister, but differing in the more elongate pronotum and tegmina, the blackish coloration of the "horse-shoe" on the pronotum and in the non-annulate antennæ.

Size, large; form moderately depressed; surface of pronotum rugulose; of abdomen tuberculate. Head completely hidden under the pronotum; interspace between the eyes very great and equal to that between the antennal bases; face considerably flattened. Pronotum

with the lateral and cephalic margins strongly arcuate and slightly produced cephalad. The margin proper cingulate and strongly elevated and sub-lamellate cephalad; caudal margin arcuato-truncate, rather narrowly rounding laterad in the lateral margins, surface with an elevated swollen horseshoe-shaped design, the "heels" directed

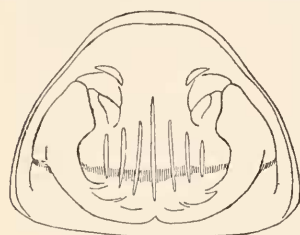


Fig. 1.—*Hormetica atlas* n. sp. Dorsal outline of pronotum of type showing general form of the elevated "horse-shoe" pattern.

cephalad and thicker and more elevated than the other portions of the pattern, having at their internal angle a blunt tubercle; area within the "horseshoe" biundulate and with seven low more or less parallel ridges, cephalad of which are several low diverging sub-arcuate folds, of which the distal is subtuberculate, while immediately cephalad of the elevated "heel" of the pattern is a low but acute tubercle; lateral portions of the pronotum distinctly deflected. Tegmina slightly exceeding the

length of the pronotum, subovate, width nearly three-fourths of the length, coriaceous; costal margin hardly arcuate proximad, strongly arcuate distad, apex well rounded, sutural margin straight; anal sulcus reaching slightly distad of the middle of the sutural margin. Wings falling but little short of the tegmina. Abdomen with the greatest width slightly exceeding the tegminal length, dorsum distinctly but finely tuberculate mesad; supra-anal plate damaged; cerci short, depressed, sub-fusiform; sub-genital plate distinctly emarginato-sinuate on the right side, styles lateral and extremely short.

General color tawny, darker and more rufescent on the head, pronotum, tegmina and limbs; pronotal pattern seal brown, the enclosed area dark chocolate; antennæ with the proximal joint of the color of the head, followed by seal brown fading into fawn color distad; eyes of the general color; base of the tegminal vein trunk blackish; dorsal abdominal segments with the median section of their distal halves darker than the other portion of the segments; tibial spines blackish.

#### MEASUREMENTS.

	♂ Type.	♀ Paratype.
Length of body	45.5 mm.	35.5 mm.
Length of pronotum	15.5 mm.	11. mm.
Greatest width of pronotum	19.5 mm.	14.5 mm.
Length of tegmen	18.5 mm.	12.8 mm.
Greatest width of tegmen	14.2 mm.	10. mm.
Greatest width of abdomen	20.5 mm.	16.2 mm.

A paratypic female (Bertoni, No. 704) has also been examined, the measurements for it being given above. It differs from the type in the characters usual in that sex of species of this genus, viz.: The smaller size, the great suppression of the pronotal "horseshoe" pattern and the absence of the marked lamellato-elevate character of the cephalic pronotal margin. The supra-anal plate is perfect in this specimen and transverse arcuate in form with the faintest possible median emargination.

***Dasyposoma nigra* Brunner.**

Puerto Bertoni.—1905. One female. (Bertoni, No. 421).

This specimen is somewhat smaller than Brunner's measurements (type from Brazil), but otherwise the Puerto Bertoni individual does not appear separable.

MANTIDAE.

***Acanthops sinuata* (Stoll).**

Puerto Bertoni.—One male. (Schrottky, No. 3).

Puerto Bertoni.—1909. One male. (Bertoni, No. 398).

This species has been recorded from Sapucay, Paraguay, and Paraguay without further locality.

ACRIDIDAE.

***Apotettix bruneri* Hancock.**

Puerto Bertoni.—One female. (Schrottky).

This is the first record of the species with exact locality.

***Sisantum gracilicornis* (Bruner).**

1910.—*Orphula gracilicornis* Bruner, ENT. NEWS, XXI, p. 301, [Puerto Bertoni, Paraguay.]

Puerto Bertoni.—One female. January 18, 1910. (Schrottky, No. 2).

Puerto Bertoni.—One female. No date. (Schrottky).

When compared with a paratype of *Sisantum notochloris*, the type of the genus *Sisantum*, and specimens of *Orphula pagana*, the type of the genus *Orphula*, we cannot agree with the original author in his generic assignment of this species. While it is true that the apex of the tegmina is narrowly oblique truncate, it is by no means the obliquely truncate apex of *O. pagana*,

while the apex of the same in *Sisantum notochloris* is not decidedly rounded, much approaching that seen in *gracilicornis*. Again the caudal femora and fastigio-facial angle are far nearer the type found in *notochloris* than in *O. pagana*, the quite elongate, little inflated femora found in *pagana* being quite different from the more robust, distinctly inflated character of these parts in *Sisantum notochloris* and *gracilicornis*.

The two specimens in hand are slightly larger than the measurements of the female sex given by Bruner.

**Orphulella punctata** (DeGeer).

Puerto Bertoni.—One female. (Schrottky).

This individual belongs to the form *elegans*.

**Ommexecha virens** Serville.

Puerto Bertoni.—One female. December 13, 1909. (Bertoni, No. 394 part).

Puerto Bertoni.—One female. No date. (Schrottky).

One of these specimens is suffused with ferruginous, while the other has a "salt and pepper" effect of gray on brownish. In response to a query regarding the color variation of individuals of this and other species of the genus, Senor Bertoni writes that "the *Ommexecheae* live in communities, are very variable in color and the green and obscure individuals are encountered in copula."

**Tropinotus discoideus** Serville.

Puerto Bertoni.—Three males, two females. (Schrottky). Two of the males have green on the dorsum as previously described by Rehn.\*

**Chromacris Stolli** (Pictet and Saussure).

Puerto Bertoni.—January, 1910. One male, one female. (Schrottky, No. 1).

**Adimantus vitticeps** (Blanchard).

Puerto Bertoni.—One female. (Schrottky, No. 6).

The following notes on the nymphal condition of this specimen have been supplied by the collector.

---

\*Proc. Acad. Nat. Sci. Phila., 1907, p. 170.

No. 6. Nymph ♀ (the same individual I sent you after its transformation.) Food-plant: Sugar cane. January. Not common. Head above yellow with two green stripes with a black center, behind the eyes a large green spot. Face green with black shades, mouth-parts whitish, palpi with black points at apex. Pronotum yellowish green; on each side two longitudinal stripes composed of blackish green specks; mesopleuræ yellow with three blackish green transverse stripes; wings clear green. Abdomen above yellowish green, each segment on both sides with two longitudinal stripes of dark green color, so that four stripes, more or less complete, run over the dorsum of abdomen, the last segment yellow with black cerci. Legs greenish and with black spots in regular intervals; femora III yellowish, the outer side with a dark green longitudinal stripe; tibiæ and tarsi III spotted with black. Sternum yellowish with a black margin and a red patch. Venter greenish, each sternite with lateral triangular black spots.

#### TETTIGONIIDAE.

*Isophya melanochloris* n. sp.

*Type*.—♂; Puerto Bertoni, Paraguay.—November 2, 1909. (Bertoni, No. 397). [A. N. S. P. type, No. 5175.]

A very distinct species of the genus with bidentate cerci, sharply pointed processes to the subgenital plate and a most striking livery of green and black.

Size somewhat large (for the genus). Head short, occiput roundly declivent to the fastigium, very slightly inflated; fastigium about half again as broad as the proximal antennal joint, sub-quadrate, sulcate mesad, distal margin broadly in contact with the broad truncate facial fastigium; eyes small, rather tumescent, ovate in outline; antennæ exceeding the body in length. Pronotum deplanate dorsad, the disc slightly expanding caudad, the caudal width contained about one and one-quarter times in the length, cephalic margin of disc sub-truncate, caudal margin arcuato-subtruncate, caudal section with a very short but decided medio-longitudinal carina; lateral angles of disc rounded cephalad, decided caudad; lateral lobes about one and one-third times as long as deep, ventro-cephalic angle sub-rectangulate, ventro-caudal angle and caudal margin regularly arcuate, humeral sinus hardly indicated. Tegmina very slightly shorter than the dorsal length of the pronotum, apex at the extremity of the principal veins and rounded, sutural margin regularly arcuate to the apex, costal margin sub-arcuate; tympanum covering al-

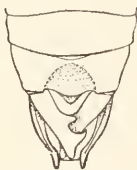


Fig. 2.—*Isophya melanochloris* n. sp. Dorsal view of apex of abdomen of type (x 5).

most the entire tegmen, transverse vein moderately robust. Abdomen inflated; terminal dorsal abdominal segment semi-elliptically depressed, medio-longitudinally sulcate, distal margin slightly obtuse-angulate; cerci straight, rather robust, apex bluntly pointed, internal face with a pre-apical and a median tooth, of which the former is slightly recurved and distally spiniform; sub-genital plate\* with a pair of slightly divergent styliiform processes, between which the margin is sub-truncate. Cephalic, median and caudal femora unarmed on ventral surface and without genicular spines; cephalic tibiæ with the tympanum open, all four margins of median and distal sections of tibiæ armed with spines; median tibiæ with the margins spined; caudal tibiæ very slightly longer than the femora; all tarsi without arolia between the claws.

General color apple green laterad, becoming olive green on the sides of the head and face and bistre on the dorsum of head and pronotum. Dorsum of abdomen with a moderately broad medio-longitudinal stripe of velvety black, reaching to the terminal abdominal segment. Tegmina with the costal field blackish narrowly edged with ferruginous, the area of the principal veins slightly ferruginous, discoidal field oil green, tympanum varied with rufous, seal brown and pale greenish. Antennæ black, more or less ferruginous proximad; eyes chestnut. Limbs burnt umber, more or less lined and washed with seal brown; caudal femora with a broad lateral area of seal brown, proximal extremity of the same apple green; caudal tibiæ largely seal brown.

#### MEASUREMENTS.

Length of body	22. mm.
Length of pronotum	4.5 mm.
Greatest dorsal width of pronotum	3.8 mm.
Length of tegmen	5.5 mm.
Width of tympanum of tegmen	3.8 mm.
Length of caudal femur	20.5 mm.

The type of this species is unique.

#### *Scaphura nigra* (Thunberg).

Puerto Bertoni.—November, 1909. One immature male, one immature female. (Bertoni).

#### *Gymnocera fasciata* (Brunner).

Puerto Bertoni.—October, 1904. One female. (Bertoni, No. 411).

There is some uncertainty regarding the determination of

---

\*This is considerably mutilated in the type, but its structure is evident.



this specimen, as it has lost a good portion of the original coloration.

**Phylloptera alliedea** Caudell.

Puerto Bertoni.—October, 1907. One male. (Bertoni, No. 405).

**Theudoria nigrolineata** Brunner.

Puerto Bertoni.—One female. (Bertoni).

This species was described from Buenos Ayres, this being the next record for the species.

**Theudoria melanocnemus** (Stal).

Puerto Bertoni.—November, 1907. One female. (Bertoni, No. 414).

The previous records of this form were from Buenos Ayres (type) and Montevideo.

**Dasyscelis normalis** Brunner.

Puerto Bertoni.—November, 1905. One female. (Bertoni, No. 418).

**Lichenochrus hilaris** Brunner.

Puerto Bertoni.—November, 1905. One female. (Bertoni, No. 417).

This species was previously known only from Matto Grosso, Brazil.

**Lichenochrus** sp.

Puerto Bertoni.—November, 1909. One immature female. (Bertoni, No. 407).

**Paroxyprora tenuicauda** Karny.

Puerto Bertoni.—One male. (Schrottky).

Puerto Bertoni.—1905. One female. (Bertoni, No. 705).

This species was recently described from Rio Grande do Sul, Brazil, and there is some little uncertainty regarding the determination of the specimens in hand.

**Xiphilimum amplipenne** Caudell.

Puerto Bertoni.—January, 1910. One female. (Bertoni, No. 408).



This species was previously known only from Sapucay, Paraguay.

**BERTONIELLA** n. gen.

A member of the Agraeciini allied to *Lobaspis* Redtenbacher, from which it differs in having the tegmina and wings no longer than the body, in having the genicular lobes of the cephalic femora and cephalic one of the median limbs non-spinose, and in the decidedly abbreviate limbs in the male. From *Gonatanthus* Karny it can be immediately separated by the non-spinose cephalic genicular lobes, from *Anthracites* Redtenbacher by the longer tegmina and shorter limbs, from *Paralobaspis* Giglio-Tos by the absence of the peculiar fastigial development of that genus, from *Nannagroccia* by the arcuate ovipositor and from *Alphopteryx* Redtenbacher by the different tegmina.

Fastigium spiniform, contiguous ventrad with facial fastigium, antennæ greatly exceeding length of body; eyes subglobose. Pronotum in male produced caudad over tegminal tympanum; humeral sinus hardly indicated. Tegmina subcoriaceous, no longer than body, apex rounded. Prosternum long bispinose. Supra-anal segment of male subangulate, fissate; cerci of male short, strongly incurved, apically toothed; sub-genital plate of male with paired styliform appendages surmounted by true styles. Ovipositor falcate, acute, margins entire. Limbs short and robust; genicular lobes of cephalic femora and cephalic lobe of median femora rounded, non-spinose, caudal lobe of median femora spinose, genicular lobes of caudal femora spinose; ventro-lateral margin of caudal femora spined, ventro-cephalic margins of cephalic and median femora each with several spines.

*Type*.—*B. agraccioides* n. sp.

We take pleasure in dedicating this most interesting genus to Senor A. de Winkelried Bertoni, who collected the type and who has done so much to make known to science the rich fauna of Paraguay.

**Bertoniella agraccioides** n. sp.

*Type*.—♂; Puerto Bertoni, Paraguay.—November, 1909. (A. de Winkelried Bertoni.) [A. N. S. P., type No. 5176.]

Size, rather small; form, robust. Head broad, occiput nearly horizontal; fastigium narrow, spiniform, apex rounded, not extending cephalad of the proximal antennal joint; eyes globose, but little prominent; antennæ with proximal joint swollen on internal face. Pronotum with greater dorsal width contained more than twice in length of same, caudal section of disk produced caudad in an arcuate extension covering almost the entire tympanal field of tegmina; cephalic margin of disk truncate; lateral lobes with their greatest depth contained over

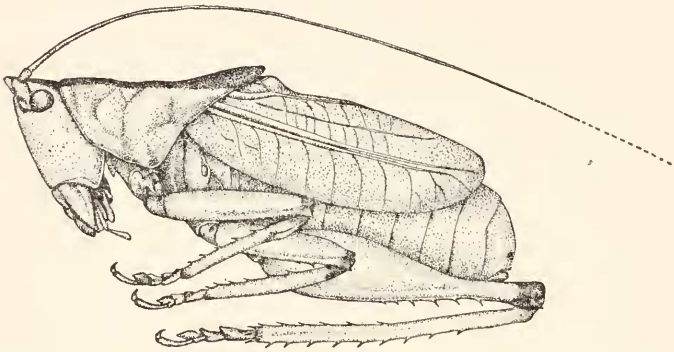


Fig. 3.—*Bertoniella agraeoides* n. gen., n. sp. Lateral view of male type (x 3).

one and one-half times in greatest length; ventral margin oblique truncate, ventro-caudal angle obtuse-angulate, caudal margin oblique truncate, humeral sinus hardly appreciable. Tegmina sublanceolate, about reaching base of supra-anal segment, costal margin arcuate distad, apex rounded, structure coriaceous, subreticulate. Wings distinctly but not greatly shorter than tegmina. Supra-anal segment (terminal dorsal abdominal segment) very narrowly fissate for about one-third of its length, margin very obtuse-angulate; cerci with lateral face of proximal portion decidedly and roundly excavate; subgenital plate with styli-form appendages fairly robust,

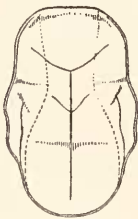


Fig. 4.—*Bertoniella agraeoides* n. gen., n. sp. Dorsal outline of pronotum of male type (x 3).

parallel, separated by about the width of one appendage, true styles short. Cephalic femora about two-thirds as long as the pronotal disk, armed with three spines distad on the ventro-cephalic margin, ventro-caudal margin unarmed; median femora slightly shorter than cephalic pair, similarly armed; cephalic tibiae with tympanum cleft-shaped, cephalic and median tibiae unarmed dorsad, armed on both margins ventrad; caudal femora about as long

as the tegmina, decidedly inflated in the proximal two-thirds, distal portion narrow, lateral margin with five to six distal spines, internal margin with one or two distal spines; caudal tibiae subequal to the femora in length, very slightly bowed.

General color ochraceous, the limbs approaching tawny ochraceous; dorsum of head and entire dorsum of pronotum brownish black, this narrowing cephalad and extending over the dorsal surface of the fastigium; genicular regions of the femora and tibiae, a spot at the distal extremity of tympanal slit and less clearly defined areas at the tips of the tibiae brownish black; eyes chestnut; antennal scrobes brownish black; tegmina with the anal field strongly suffused with dark brownish, costal and discoidal fields with a few scattered irregular spots of brownish black.

#### MEASUREMENTS.

	Type ♂	♀
Length of body	22.5 mm.	26.5 mm.
Length of pronotum	9.2 mm.	8.5 mm.
Greatest (caudal) dorsal width of pronotum	4.2 mm.	4. mm.
Length of tegmen	13.5 mm.	16. mm.
Length of caudal femur	13. mm.	16.2 mm.
Length of ovipositor		13. mm.

A female of this species taken by Schrottky at the type locality (without recorded date) gives the measurements entered in the above table with those of the type. The characters of disagreement with the male description are here given.



Fig. 5.—*Bertoniella agraeoides* n. gen., n. sp. Outline of ovipositor of female type (x 2).

Pronotum with caudal development of disk much less than in male, although of similar shape; caudal margin of lateral lobes slightly sigmoid, the humeral sinus hardly marked. Ovipositor nearly equal to caudal femora in length, rather broad, falcate; subgenital plate small, produced trigonal; apex rather broadly fissate. Color

as in male, ovipositor of general color.

#### *Lutosa\* paranensis* n. sp.

*Type*.—♂; Puerto Bertoni, Paraguay.—October, 1909. (Bertoni, No. 410). [A. N. S. P., type No. 5177.]

Allied to *L. brasiliensis* (Brunner), from Santa Catharina, Brazil, from which it differs in the hardly curved caudal tibiae and considerably smaller size.

\**Pherterus* of authors.

Size medium; form robust, moderately compressed; surface polished. Head with the occiput roundly declivent to the subvertical fastigium, which is slightly broader than the proximal antennal joint; margin bluntly acute-angulate; antennæ over twice the length of body, proximal joint elongate, cylindrical; eyes not at all prominent, pyriform; apex ventrad. Pronotum with the greatest width contained about one and one-third times in the length; cephalic and caudal margins, subtruncate; lateral lobes arcuate-angulate ventrad, ventral angles rounded. Cerci moderately elongate, slightly tapering, apex acute; subgenial plate rectangulate emarginate caudad, styles flanking the emargination and of fair length. Cephalic and median limbs similar in size and spine development. Caudal femora very robust, the proximal three-fourths inflated, margins unarmed, external face with a regular pattern of oblique arcuate dorso-caudad impressed lines; caudal tibiæ nearly straight; principal internal caudal spur reaching to the apex of the third tarsal joint, claws without arolia.

General color deep tawny ochraceous, ventrad becoming buffy and dorsad becoming suffused with seal brown; a medio-longitudinal line on the abdomen is deep ochraceous rufous; pronotum with the seal brown narrowed and much of the dorsum deep ochraceous, a narrow median line and large lateral patches of this color being present; eyes, black; antennæ ochraceous; fastigium and dorsum of head of the dorsal color; face dirty clay color with the ocelli clear buff.

#### MEASUREMENTS.

Length of body	19.5 mm.
Length of pronotum	7.2 mm.
Greatest width of pronotum	6.2 mm
Length of caudal femur	18. mm.

The type is the only specimen of the species seen by us.

#### GRYLLIDAE.

##### *Rhipipteryx brullei* Serville.

Puerto Bertoni.—Two females. (Schrottky, No. 4).

##### *Eneoptera surinamensis* (DeGeer).

Puerto Bertoni.—October 5, 1909. One female. (Bertoni, No. 406).

---

ABUNDANCE OF COSTA RICAN BUTTERFLIES.—Mr. William Schaus reports that he took 150 species of *Thecla* in Costa Rica (64 are mentioned in the *Biologia* as from that country) and over 300 species of Hesperidæ.